Parental education expectations and achievement for Indigenous students in Latin America: evidence from TERCE learning survey

Article (Accepted Version)

Parental education expectations and achievement for Indigenous students in Latin America: evidence from TERCE learning survey

Marcos Delprato[a]

[a]Centre for International Education, University of Sussex, Brighton BN1 9QQ UK

ARTICLE HISTORY
Compiled November 18, 2018

ABSTRACT
Though mechanisms of Indigenous' exclusion in education due resources is well understood, there is a lack of evidence on role of educational expectations as an additional barrier for Indigenous children learning. In this paper, I use a recent Latin American learning survey (TERCE) for sixth grade students covering 12 countries to assess whether Indigenous families have lower educational expectations than non-Indigenous families and whether lower Indigenous parental schooling expectations are also linked to lower learning of their children. I found the that the context (the external channel) matters on the formation and transition of educational expectations for Indigenous children learning.

Email: m.delprato@sussex.ac.uk

1. Introduction

The interculturalism and rights of Indigenous[1] people is a process that was formalised by the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Adopted in 2007, it is now the most comprehensive international instrument on the rights of Indigenous peoples, establishing a universal framework of minimum standards for the survival, dignity and well-being of Indigenous people.[2] Articles 11 to 15 relate to the educational rights to which Indigenous peoples are entitled to[3] and in particular Article 14 deals with children rights: "...2. Indigenous individuals, particularly children, have the right to all levels and forms of education of the State without discrimination."[4] This framework highlights that States need to adopt measures to ensure that Indigenous children are able to exercise their right to education under the same conditions as all other children by establishing culturally appropriate education services and to increase access to schools in areas where Indigenous children live (CEPAL, 2012; Del Popolo, 2014). In line with this, the new 2030 Agenda for Sustainable Development has also placed a renewed importance on Indigenous populations because of the sustainable nature of new goals. There is increasing recognition that strengthening Indigenous communities' rights to their lands and resources and agency through education has proved to be an effective strategy in combatting climate change (Freire, 2015) and in achieving environmental sustainability by learning from the knowledge and lifestyles of Indigenous communities (UNESCO, 2016).

Many of the Sustainable Development Goals (SDGs) and associated targets are relevant for Indigenous people.[5] Two SDGs targets in particular, Goal 2 on Zero Hunger (target 2.3) and Goal 4 on education (target 4.5), are directly applicable to Indigenous populations as well as targets on land rights.[6] Moreover, there is an emphasis on equity within SDG 4 about education, stressing the need for further disaggregation on indicators to narrow education disparities in vulnerable groups, and calling for monitoring Indigenous populations schooling: "By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations" (Target 4.5).[7] Similarly, Target 4.7 talks about the cultural contribution to sustainable development of Indigenous communities. In short, the post 2015 agenda has stressed the importance of Indigeneity as a key marker for education inequality to be monitored. Yet knowing the reasons behind the persistency of the well documented inequality towards Indigenous people (Arteaga & Glewwe, 2017; Del Popolo, 2017; Hall & Patrinos, 2012; Levitan & Post, 2017) is even more critical in achieving a long-term reduction of Indigenous educational gaps.

Progress on narrowing the Indigenous learning gaps requires an empirical evaluation of drivers of inequality. These drivers take different forms and have specificities for Indigenous populations as they are a product of cumulative historical elements reinforcing the group's exclusion (Manrique, 1999; Van Dijk, 2001). From an empirical perspective, the learning gap between Indigenous students and non-Indigenous students can stem from two sources/channels, which often overlap. One channel is internal ("discrimination"): a different treatment of individuals with the same characteristics (Chong & Ñopo, 2008; Telles & Bailey, 2013). Through this channel, though it may be the case that Indigenous people have the same background characteristics (say, wealth and education) than non-Indigenous people, they are likely to be treated unfairly because of historical racial hierarchy (Manrique, 1999; Wade, 2010), implemented under Spanish colonialism in the case of Latin America. One of the leading discrimination processes occurs in the labour market in the form of lower job offers

and wages (MacIsaac & Patrinos, 1995; Patrinos, 2000). The other channel is external ("exclusion"): explained by external constraints and inequality in the access to factors or assets because of poverty and location (Del Popolo, 2014; Patrinos & Skoufias, 2007) which, in turn, has an impact on educational opportunities. Typically, Indigenous people live in rural and deprived areas where schools' conditions are poor (Hernandez-Zavala, Patrinos, Sakellariou, & Shapiro, 2006).

An unexplored phenomenon across these two channels (although vital), in relationship to Indigenous students learning, is parental education expectations. Educational expectations from parents can be defined as realistic beliefs and assessment of their children's future achievement (Goldenberg, Gallimore, Reese, & Garnier, 2001) or adjusted aspirations. Higher expectations have been found to be a positive factor for children's academic performance even after socio-economic differences are considered (Yamamoto & Holloway, 2010) because of their positive association with the quality and quantity of parental involvement and students' motivation and resilience. Thus, in addition to standard socio-economic drivers of Indigenous inequality, assessing the role of expectations is important.

On top of the dimension of parental educational expectations as being 'realistic assessments from a child's past performance', expectations are also a combination of "educated predictions of future success and hopes for the child" (Glick & White, 2004, p. 282). This calls for an exploration of the role of the internal and external channels of inequality on the formation of expectations and how this is translated into a child's learning. Will parents education predictions of future success and hopes for their Indigenous children be low in an scenario of discrimination and strong exclusion? An answer to that question could be positive expectations are shaped by poverty and discrimination suffered by Indigenous populations. Discrimination against Indigenous people in Latin America has been reinforced by historical prototypes of stigmatisation and inferiority during colonial times (Wade, 2010), affecting the decision making of Indigenous parents through lowering the expectations on their children capabilities.

Certainly, Indigenous parents' expectations, as realistic assessments of their children's future, are likely to be low if there are few schooling opportunities of poor quality, the opportunity costs of attending schools and the time employed for learning are high (Arteaga & Glewwe, 2017; Hernandez-Zavala et al., 2006). This is the external channel. Likewise, as stated above, expectations (in their dimension of hopes and prediction of success) could be low due the internalisation of stereotypes by indigenous people as a consequence of a historical discriminatory process (Van Dijk, 2003). This process of internalisation can be strengthened by different actors once a child is at school; for instance, Treviño (2003) found that teachers have lower educational expectations in rural areas where most students are Indigenous. An empirical assessment of the internal channel is vital as it can prolong inequality among Indigenous and non-Indigenous peers through its impact on low aspirations and lack of educational investment from parents (Pasquier-Doumer & Brandon, 2015).

Hence, in this paper, I aim to contribute to the Indigenous-learning literature from a new dimension and focus on the role of parental education expectations behind education inequalities of Indigenous populations for the Latin American region. I assess one channel of inequality, the role of Indigenous parents' expectations as a barrier to their children's learning and how these expectations are shaped by the context. In particular, I evaluate whether Indigenous groups have lower parental educational expectations than non-Indigenous groups and if so whether this is translated into lower learning levels for their children. The focus on education inequality is justified as learning has over-reaching associations to other spheres of development including health,

housing, child mortality and life expectancy (World Bank, 2015). As far as I am aware, this is the first study investigating the role of educational expectations on learning for Indigenous groups for the Latin America region. Only Pasquier-Doumer and Brandon (2015) look at the impact of aspirations (defined by children's occupation) on Indigenous learning gaps, though this study is not from the perspective of parents and it is based on only one country (i.e., Peru).

Because Indigenous definitions encompass different types of historical and country specific discrimination processes,[8] I rely on three alternative indicators to classify a child as Indigenous: (i) one where both parents are Indigenous, (ii) a "mestizo" definition (where only one parent is Indigenous), and (iii) based on the spoken language at home. Furthermore, the paper is based on Latin America because of the predominance of Indigenous groups within the region. There are 826 Indigenous peoples in the region (ECLAC, 2014) and it is estimated that at least 44,8 million Indigenous people lived in the region by 2010, accounting for 8.3% of the region's population (though being clearly disadvantaged as they represent approximately 14% of the poor and 17% of the extremely poor in the region, World Bank, 2015) with an an overall increase of 49.3% in the last 10 years, perhaps due to an increase in self-identification (Del Popolo, 2014). There is a large variation across the region with Bolivia, Guatemala, Mexico and Peru having the largest Indigenous populations (over 5.8 million) and percentages with respect to the total population varying between 15% (Mexico) to 62% (Bolivia).[9]

Although there has been some improvement over the last decade in terms of access, education inequality linked to Indigeneity is still large. For instance, around 6.3% of the Indigenous children aged 7 to 18 have either not formally enrolled in school or have dropped out without passing any grade (whereas for non-Indigenous children this figure is 1.9%, CEPAL, 2012), with few Indigenous students participating in post-secondary and higher education in Latin America.[10] This is a result of an initial selection process beginning at primary school level where Indigenous children have fewer chances to reach the same learning levels of non-Indigenous children. For instance, UNESCO-LLECE (2010) finds gaps around 15 points in math and language test scores for most countries in the region.

The analysis is based on data from 12 countries of the 2013 Latin American learning survey (TERCE) of sixth grade students. First, I show whether being Indigenous is negatively associated with lower parental schooling expectations (the internal channel) and how expectations are shaped (the external channel). Multilevel (3-level) models are employed to account for the nesting nature of the data (students nested within schools nested within countries) and different levels of heterogeneity. To isolate the influence of students, family and school characteristics differences between Indigenous and non-Indigenous children groups, I re-assess this relationship using matched subsamples obtained through propensity score matching which allows me to examine whether there is some sort of educational expectations failure caused by internalisation of imposed discrimination values from non-Indigenous groups.[11] Secondly, using the same approach, I estimate the association between parental education expectations and math and reading scores for Indigenous children, also addressing different pathways mediating this association (be it children educational inputs, parental education, school quality or school peer effects).

In addition, to evaluate whether the parental educational expectation-children learning relationship is robust to the presence of unobservables (for example, low expectations can stem from parental perceptions that a child has low ability which in turn will affect his/her learning or, alternatively, low parental expectations may reflect the fact that parents have a lower value of education and therefore they reduce their parental

involvement in their children schooling: Glick & White, 2004; Rutchick, Smyth, Lopoo, & Dusek, 2009), I carry out a bounding analysis (Oster, 2016). This approach has the advantage of not needing to identify an instrument (which is often difficult to validate).

The structure of the paper is as follows. Section 2 includes a review on the association of expectations and learning for Indigenous populations. Section 3 presents the data and Section 4 contains the estimation strategy. Results are presented in Section 5 and Section 6 concludes.

2. Background

Do Indigenous people have lower educational expectations than non-Indigenous people? Though, there is not a fully conclusive answer to this question and this might be context-specific, the literature on expectations and education (which, to my knowledge, is not extensive if one relies on population-representative empirical work) points towards expectations as being a source Indigenous learning inequality. Overall, this is because of expectations associations with poverty (Escobal & Ponce, 2007; Hall & Patrinos, 2012) and with other social and school constraints (Ames, 2005; Montero et al., 2001; Zavala et al., 2007), the social process under which expectations are formed, and the internalisation of discriminatory values by Indigenous populations (Ames, 2012). As stated for the Peruvian context by Ames, 2012 "...the daily school experience for indigenous children entails constant messages that undervalue or neglect their culture and language and their very identity as indigenous children" (p 282).

A framing for the hypothesis of Indigenous parents having lower expectations on their children's education in comparison to their non-Indigenous peers can find an explanation through a social process with historical roots, which is being constantly strengthened by external determinants. Indeed, as theoretically argued by Pasquier-Doumer and Brandon (2015) relying on models of formation of aspirations in deprived contexts (i.e., Genicot & Ray, 2017; Ray, 2006), education expectations among Indigenous groups would be lower than their non-Indigenous groups through different pathways: aspirations failure in poverty -due to limited information and restricted opportunities to make the most of educational investments; social interactions in the formation of aspirations; and the internalisation of discriminatory values and related low self-esteem and economic opportunities. For instance, schools as a platform for expectations' formation would make Indigenous parents realise that the aspiration gap (i.e., the gap between their aspirations and their current standard of living) is very wide, a situation of aspirations failure. Deprived conditions in schools, as well as teachers having lower expectations for their children in some cases like rural girls (Ames, 2012) or even teachers who speak the same language as the students (Ames, 2013), would be seen as drawbacks for the quality of learning their children could achieve and in turn would lower their aspirations. As various studies have documented (Ames, 2005; Hernandez-Zavala et al., 2006), conditions in schools attended by Indigenous children, especially in rural areas, are very poor; that is, they have inadequate infrastructure and furniture, lack of educational materials and resources as well as having insufficient teacher training and low quality professional qualifications. Besides, schools would widen inequality on aspirations because Indigenous' interactions with unskilled neighbours facing similar deprivations.

Nevertheless, there is some evidence that Indigenous parents and their children would both consider the importance of education as a way out of poverty. Post (1985), for instance, finds that in Peru Indigenous students have significantly higher expec-

tations of the marginal value of university graduation and that Indigenous students' access to information increase economic benefits of going to university (Post, 1994). Indigenous parents, too, understand that for their children to have a better future education is key allowing them to master non-Indigenous languages and integrating into urban areas where they would be able to get better jobs, despite knowing the marginalization of Indigenous languages and culture in school settings (Ames, 2012). Even in poor rural areas, the high levels of enrolment in education are related to high educational aspirations from both children and their parents. Using Young Lives[12] data, Crivello (2009) finds that educational aspirations and expectations are key for the future of students growing up in a context of poverty in Peru making successful transitions to adulthood and out of poverty by migrating. Similarly, Ames (2013) finds that both parents and children believe that educational achievements and better-paid jobs are not only individual goals, but also have implications for the whole family. Recently, Guerrero, Sugimaru, Cussianovich, De Fraine, and Cueto (2016), also for Peru using the Young Lives dataset, confirm that increasing aspirations among low-income young people and their caregivers and education is highly valued. On the contrary, raising the self-esteem and self-efficacy of Indigenous students in particular are faced with the barriers of low socio-economic status and low parental education. Relying on the same data, Creamer (2016) finds that parents, especially mother's education, play an important role in predicting their children's psychosocial competencies above and beyond the role of socioeconomic status.

Ultimately, the array of disadvantages faced by Indigenous populations is vast. In fact, the leading explanation of why Indigenous populations tend to have lower education expectations is the deep exclusions they suffer (i.e., the external channel). This manifests not only in a larger poverty rate than non-Indigenous groups but also in the fact that their poverty is more severe (Hall & Patrinos, 2012), more than just income inequality. Indigenous groups are excluded from quality jobs and financial markets (Patrinos & Skoufias, 2007), have insecure property and land rights (Stocks, 2005; Van Cott, 1994) reflecting a tension between land and territory (Bauer, 2016). They also lack access to infrastructure and basic services, as well as suffering from a wide range of health, education and socio-economic disparities (Del Popolo, 2017). This lock Indigenous households into poverty traps which in turn shape their aspirations as expectations failures because of the fewer opportunities they have which is then translated into weaker educational expectations for their children. The association of the poverty trap-expectations failure for Indigenous households is likely to be bidirectional. Studies from social psychology (Heath, Larrick, & Wu, 1999; Locke & Latham, 2006) argues that, the wider the expectation gaps are, the lower the chances to raise standards because of the additional effort needed to close them.

Recent empirical evidence for Latin America has shown that poverty rates for Indigenous populations have fallen more slowly than for the non-Indigenous, meaning a broader inequality between these two groups,[13] an indication of growing Indigenous poverty traps despite recent economic growth in the region (World Bank, 2015). Nearly 90% of Indigenous children were subject to some deprivation between 2000-2005, while this figure was around 60% for all children in the region (CEPAL, 2012). Within the external channel, a central barrier for the formation of high expectations on children education is parents' own education (Chevalier, Harmon, O'Sullivan, & Walker, 2013; Creamer, 2016). It is widely acknowledged in the human capital literature that education, particularly mother's education, is one of the main mechanisms of persistent intergenerational inequality (Black & Devereux, 2010). Indigenous mothers' lower levels of education halt educational investment in their children through hav-

ing lower expectations, especially in a context where poverty traps are confounded by educational supply constraints and lack of quality education (Pasquier-Doumer, 2002).

Evidence also suggests that even after accounting for demographic and economic differences between these Indigenous and non-Indigenous groups, Indigenous people are still more likely to be poor (World Bank, 2015). This supports a further mechanism of exclusion put forward in the literature, an internal channel, since a portion of inequality cannot be explained by contextual characteristics. As stated by Pasquier-Doumer and Brandon (2015) Indigenous people may have historically "internalized the discriminatory values of the criolla elite, and thus their objective chances of attaining a high socio-economic status" (p. 210). This cumulative discriminatory process creates stigmas and stereotypes which, being internalised among Indigenous groups, lower their self-esteem and place some doubt on their chances of breaking social traps through education, leading to lower schooling investments.

Net of socio-economic factors, parental expectations have been found to play a critical role in children's academic success.[14] A meta analysis by Jeynes (2007) finds that parental expectations are the strongest family-level predictor of student achievement outcomes. Having lower expectations on the educational level a child would reach will, for instance, affect the quantity and quality of parental investment on his/her schooling (Pomerantz, Moorman, & Litwack, 2007) and so it will hinder a child's learning. Various studies find that students whose parents hold high expectations will persist more in school and achieve larger grades and scores in standardised test (e.g., Davis-Kean, 2005; Rutchick et al., 2009). High parental expectations are also linked to higher student motivation to achieve in school, and for children to have more academic resilience and increasing aspirations to attend college. Yamamoto and Holloway (2010) identify at least three mechanisms through which parental expectations influence student's academic outcomes: a child's internalization of parents' valuation of achievement, a child's higher competency beliefs, and a more intensive and effective parental involvement. According to socio-cultural models, parents' expectations formation about their children's schooling will be partially dependent on their racial or ethnic heritage (Yamamoto & Holloway, 2010), explaining differential impacts from expectations on the learning levels of Indigenous children and their peers. For instance, Indigenous parents may lack a sense of self-efficacy regarding the support of children's schooling because of language and lack of familiarity with education contexts.

3. Data and definitions

3.1. The data

The analysis is based on the Third Regional Comparative and Explanatory Study (TERCE), a learning survey for 15 Latin American countries (i.e., Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay) for 2013. TERCE's main goal is to provide information on the education quality in the region and, by matching students' learning indicators (on maths, reading and writing) to contextual background information, to contribute to effective educational policies (UNESCO-OREALC, 2015a). I focus on students attending sixth grade, which covers around 3,065 schools and 67,000 students (UNESCO-OREALC, 2015b, 2016). Using a 2% threshold for inclusion Indigenous prevalence, three countries (Costa Rica, Dominican Rep. and Uruguay) are dropped from the analysis. After excluding observations where

there is missing information on parents' reports to construct alternative definitions of Indigenous groups, the final working sample for the different definitions of a child's Indigenousness varies between 31,751-40,877 and associated the number of schools varies around 2,222-2,325 (see: Table 1).

[*Table 1 here*]

3.2. Variable definitions

3.2.1. Indigenous indicators

For the empirical analysis, I use three indicators for measuring whether a child is Indigenous based on parental answers to their ethnicity and spoken language. These are: full Indigenous (I1) where both parents are Indigenous, "mestizo" (I2) where only one parent is Indigenous, and an indicator relying on language (I3) -if parents don't speak either Spanish or Portuguese at home most of the time (Table 1, columns 1 to 3). The information to produce these categories is derived from the parental questionnaire of TERCE. In particular, the question used to define I1 (and I2) is: "To which of the following native peoples do the student's parents belong?", whereas for category I3 the question used is: "At home, what language(s) does the father and mother speak most of the time?" (see Table 1 notes for more details on other alternative definitions).[15]

Around 28% of children attending grade 6 are Indigenous based on indicator I1,[16] which is much larger than the category "mestizos" (= 17.4%) and also if language is used as a marker for ethnicity (= 7.3%) (Panel A, columns 1, 2 and 3). The lower rate for I3 is in line with an increasing tendency of language replacement in the region partly caused by urban migration and globalisation (Del Popolo, 2014; Unicef, Andes, et al., 2009). Importantly, relying on the student self-reported indicator (Panel A, column 5) would lead to a significant underestimation (of over 50%) of Indigenous prevalence in the region. This is shown by the category NRI (Panel A, column 7) where 56.8% of students do not recognise themselves as Indigenous but would be so according to their parents' ethnicity (I1).

3.2.2. Education expectations

As stated above, the key explanatory variable in the paper is parental education expectations. Most researchers describe parental expectations as realistic beliefs or judgments about their children's future achievement as reflected in course grades and highest level of schooling attained (Glick & White, 2004; Goldenberg et al., 2001). Often studies operationalise parental expectations by asking parents how far they think their children will go in the schooling system. In fact, this is how expectations are measured in TERCE as parents are asked about what they believe would be the higher educational level their children will achieve: low (primary or lower secondary), medium (upper secondary or post-secondary-no tertiary, or short cycle tertiary), and high (full tertiary, master or doctorate). It should be noted that parental expectations are different from parental aspirations, which typically refer to desires, wishes or goals (Yamamoto & Holloway, 2010).

Regardless of the Indigenous definitions used, raw differences indicate that Indigenous parents have lower expectations on the educational level their children would achieve in comparison to non-Indigenous parents (Table 1, Panel B). For instance, 18.19% of Indigenous parents (I1) have low expectations (column 1) but only 7.52%

for non-Indigenous (NI) groups (column 6) and, likewise, 64.26% and 43.83% have high expectations for non-Indigenous and Indigenous groups, respectively. The gap is the largest when the comparison is done with respect to the I3 Indigenous group (column 3) based on language: as much as 28% of parents have low expectations and only 32% have high expectations. Mean tests for each of the expectation categories across I1 to I5 with respect to the distribution for the NI group are statistically different (low and medium expectations larger for Indigenous groups, and high expectations higher for the NI group).

3.2.3. Outcomes

The outcomes used in the paper are math and reading learning scores; this facilitates a comparison with other international learning survey studies. Math tests evaluate five domains of knowledge (numeric; geometric; measurement; statistics; and variation) and, for reading, domains are knowledge in comprehension and metalinguistic/theoretical concepts. These two outcomes are presented as continuous indicators (with an average of 700 points and a standard deviation of 100) and a discrete, four-levels indicators that characterise what students know and are able to do in each of the levels and grades tested. I use a discrete version of outcomes, collapsing performance into a categorical indicator for low and high achievement. The high-level achievement takes the value of 1 for those who reach levels 3 or 4, and 0 otherwise. For reading this means that high achieving students are able to interpret expressions of figurative language and strengthen the knowledge of the language components and their functions and, for maths, that they have the capabilities to solve complex problems (those that contain more than one variable), which involve operations with natural numbers, decimals and fractions, the calculation of perimeters and areas, and other aspects (UNESCO-OREALC, 2015b).

Panel C (Table 1) shows how learning gaps are linked to ethnicity, with Indigenous children under-performing in comparison to their counterparts. With respect to the NI group (column 7), the gaps for maths are: 53.2 (I1), 42.1 (I2) and 102.3 (I3), and even larger for reading (between 63-127). This means that Indigenous children not only perform worse in average but that their chances of reaching the high levels of achievement are also less likely, between 15%-22% (math) and 18%-34% (reading) lower in comparison to non-Indigenous children.

Learning levels are also related to expectations. Table 2 displays learning levels by parental education expectations. For children whose both parents are Indigenous (I1, columns 1 to 3), the difference on learning scores between those who belong to a family with high expectations rather than to a low-expectation family is around 62 (math)and 81(reading) points which, in turn, means a higher probability to reach top levels of knowledge on math and reading of 13% and 21%.[17] Note, however, that expectations have a large impact on achievement for the non-Indigenous children group (columns 10 to 12) since gaps on learning scores between the high and low expectation families are around 72 (math) and 93 (reading) points.

[*Table 2 here*]

3.2.4. Other variables used

TERCE contains several background variables at the student, family and school level variables (UNESCO-OREALC, 2015a) that influence a child's learning. This allows to control for difference between Indigenous and non-Indigenous children groups in their

observable characteristics affecting both their learning and external constraints linked to the formation of parents educational expectations among the two groups. Table 3 contains summary statistics for the two groups showing that Indigenous students are disadvantaged in terms of a wide range of personal/family and school characteristics. For example, Indigenous students are 12% more likely to repeat classes and 22% more likely to work, have inferior study conditions at home with less supervision and fewer books as well as coming from poorer families with less educated parents. At the school level, Indigenous students are more likely to attend public schools with weaker infrastructure and less experienced and qualified staff.

[*Table 3 here*]

4. Empirical strategy

Even though the methods employed use a wide range of controls and different techniques, because of the cross section nature of the analysis, standard caveats apply to the empirical strategy, that is, estimates underscore conditional correlations rather than causality. More qualified answers to whether Indigeneity has an impact on parental educational expectations (Section 4.1) and whether parents education expectations have an impact on Indigenous students relative more than non-Indigenous peers (Section 4.2), would need an experimental design and also a panel data to account for prior learning. The estimates, then, don't measure causal impacts.

4.1. Education expectations for Indigenous groups

To estimate the association between Indigeneity and parental educational expectations I use a ordered logit (OL) multilevel model. The OL is employed because of the ordinal nature of the expectations outcome (1=low, 2=medium, and 3=high) and a multilevel is used (level 1: students, and level 2: schools)[18] to account for the clustered structure of the data and school unobserved/fixed effects explaining education expectations. The only difference with an standard OL is that the multilevel version includes a vector of random effects for covariates. For the observed ordinal expectation response (denoted by e) of the family of student i in school j (e_{ij}), the cumulative probability of the response being in a category higher than s is: $\Pr(e_{ij} > s|\mathbf{x}_{ij}, \kappa_s, \mu_j) = H(\mathbf{x}_{ij}\beta + \mathbf{z}_{ij}\mu_j - \kappa_s)$, where $j = 1, ..., J$, are the number of schools, the cutpoints are $\kappa_s, ..., \kappa_{S-1}$, $\mathbf{x}_{ij}$ is the set of covariates, μ_j denotes the set random effects, and $H(.)$ represents the logistic cumulative function. The probability of observing outcome s is the difference on cumulative probabilities for two adjacent categories: $\Pr(e_{ij} = s|\kappa, \mu_j) = H(\kappa_s - \mathbf{x}_{ij}\beta - \mathbf{z}_{ij}\mu_j) - H(\kappa_{s-1} - \mathbf{x}_{ij}\beta - \mathbf{z}_{ij}\mu_j)$, where $\kappa_0 = -\infty$ and $\kappa_S = +\infty$.

The model can also be written in terms of latent continuous process e^*_{ij}:

$$e^*_{ij} = \delta I_{ij} + C\mathbf{x}_{ij}\beta + F\mathbf{x}_{ij}\theta + d_k + S\mathbf{x}_j\gamma + \mu_j + \epsilon_{ij} \quad (1)$$

where δ is the coefficient for the Indigenous dummy (I - alternatively using I1, I2 and I3 definitions from Table 1) and covariates are split into child ($C\mathbf{x}$), family ($F\mathbf{x}$) and school ($S\mathbf{x}$) groups, d_k are country dummies, and $\mathbf{z}_{ij}$ is replaced by scalar 1 as a random intercept model (RIM) is estimated. The error term includes a level 2 variation μ_j and the level 1 error ϵ_{ij} follows a logistic distribution with mean 0 and

variance $\pi^2/3$. The observed outcome is linked to the latent process as follows: $e_{ij} = 1$ if $e^*_{ij} \leq \kappa_1$, $e_{ij} = 2$ if $\kappa_1 < e^*_{ij} \leq \kappa_2$,..., and $e_{ij} = S$ if $\kappa_{S-1} < e^*_{ij}$.

The vector of child/student covariates $C\mathbf{x}_{ij}$ include age, gender, repetition, truancy, preschool attendance, whether student works; family covariates $F\mathbf{x}_{ij}$ include socio-economic status, number of books, study supervision and parental education; and school covariates $S\mathbf{x}_j$ includes dummies for school type (public private), school location (urban/rural), an infrastructure index, number of library books and web-connected PCs. Different groups of covariates are used to control for different mechanisms affecting the formation of the education expectations of parents on their children. Student covariates allow to account for a child's ability driven expectations (Weiner, 2005), family covariates to control for additional socio-economic constraints halting the chances of further education (Yamamoto & Holloway, 2010) and the effectiveness of parental involvement in children's education activities (Pomerantz et al., 2007; Sy & Schulenberg, 2005), and school covariates to capture the extent of school quality and education opportunities (Goldenberg et al., 2001) within the area where Indigenous households live.

The key relationship is given by the coefficient δ under different specifications, with child, family and school controls being sequentially added in equation (1). If $\hat{\delta}$ is found to be positive and statistically significant under full controls, then it can be argued that internal channel is at play with the internalisation of discrimination being related to expectation failure among Indigenous groups.

To further assess this relationship, I re-estimate equation (1) through matched sub-samples obtained by running propensity score matching (Rosenbaum & Rubin, 1983, 1984) using the categorical definitions of Indigenous groups. These sub-samples contain fewer observations than the original sample ($N_k < N$ as unmatched comparison units are discarded) and provide a finer control of observables (a 1 to 1 matching between Indigenous and non-Indigenous characteristics rather than controlling for the average level of characteristics as in regression models). Matched sub-samples are generated for each of the three Indigenous indicators (I1, I2 and I3) and using either level 1 or levels 1 and 2 covariates (see Table 3 for the list of covariates used for generating the propensity score).

4.2. Learning and educational expectations for Indigenous groups

A second objective of the paper is to estimate the association of expectations and learning after differences on children's characteristics and family's socio-economic and educational inputs as well as school background are controlled for. The particular interest is to examine whether weaker expectations affect Indigenous children to a larger degree than non-Indigenous children. Here I employ a three-level multilevel model (level 1: students (i), level 2: schools (j), and level 3: countries (k)) and a logit model for the dichotomous learning dependent variable y_{ijk} for math and reading (=1 for high achievement, and 0 for low achievement):

$$\begin{aligned}\text{logit}\Big(\Pr\big(y_{ijk} = 1|\mathbf{x}_{ijk}, \mu^{(2)}_{jk}, \mu^{(3)}_{k}\big)\Big) &= \delta I_{ijk} \times e_{ijk} + C\mathbf{x}_{ijk}\beta + F\mathbf{x}_{ij}\theta + S\mathbf{x}_j\gamma \\ &\quad + \mu^{(2)}_{jk} + \mu^{(3)}_{k} + \epsilon_{ijk}\end{aligned} \tag{2}$$

where $\mu^{(2)}_{jk}, \mu^{(3)}_{k}$ are school's and country's random intercepts. These two terms al-

lows to control for school and country variation on learning. The main interest from equation (2) is on the estimated coefficient δ for the interaction between the dummy for Indigenous groups and expectations ($I_{ijk} \times e_{ijk}$) under different set of controls[19] to test whether the effect of educational expectations differ between Indigenous and non-Indigenous students. Here, too, I use three definitions for Indigenous groups and, as before, I use matched sub-samples to re-evaluate the estimated coefficient for the interaction term based on the full sample. Moreover, to examine the heterogeneity in the association between parental expectations and students' academic performance, I evaluate different factors which may moderate it such as individual characteristics (e.g., gender and previous achievement proxied by repetition), family SES, mother's education and father's work type as well as school quality and peer effects.

In addition, to account for the possibility that the association of parental education expectations and student's learning is robust to the presence of unobservables, the analysis also includes bounds for estimates based on assumptions about the degree of selection between observables and unobservables. Using the Indigenous sample, I run two OLS regressions with a categorical variable for expectations (low versus medium expectations, and low versus high expectations) and I use two assumptions from Oster (2016) to construct the identified sets for the effect of expectations on learning for Indigenous groups. The first assumption assumes equal selection and the second assumption entails a bounding value for R_{max} for which the estimator would produce an effect of zero. A large value for δ (see, Oster, 2016, for details) would indicate a robust result because unobservables must be greater than observables to explain away the association of parental education expectations with Indigenous children learning, and also results would be robust to unobservables if intervals of the expectation estimated effects do not contain zero.[20] Yet again, even under this method which brings the role of unobservables into the analysis, it should be noted that estimated relationships are correlational rather than causal.

5. Results

5.1. Indigenous students and expectations gaps

The left part of Table 4 (columns 1 to 4) presents the ordered logit (OL) two-level multilevel estimates for the three Indigenous definitions (Panels A, B and C) for the full sample. Results show that being Indigenous is significantly and negatively associated with parental education expectations. This supports other findings on contrasted expectations of parents by ethnic/racial differences (e.g., Glick & White, 2004). The estimated odds ratios (OR) for the Indigenous dummies I are below one and they are statistically significant in all models -i.e., from the null model (column 1) to the specification with student and family covariates (column 3). In Panel A, for instance, estimates show that coming from a household where both parents are Indigenous (I1) is related to a 30% ($\approx$ 1-0.702) lower chances of moving from the low to the medium or high expectations groups, and this effect is reduced to 7% ($\approx$ 1-0.932) when student and family (level 1) explanatory variables are controlled for. For the other two indicators in Panels B and C, the effect of Indigeneity on expectations (column 3) is higher (at 15%), especially Indigeneity is defined by language spoken at home (Panel C) which it is strongly associated with quite low expectations (for example, in the null model, OR = 0.418).

[*Table 4 here*]

Estimates for the variance at level 2 suggest that schools are a significant source of variation on the formation of parental education expectations. The intra-class correlation coefficient $\left(\text{ICC} = \left(\sigma^2_{\text{school}}/\left[\sigma^2_{\text{school}} + \pi^2/3\right]\right)\right.$, which is the proportion of the total variance on expectation outcome e_{ij} attributed to schools, varies from 32% (null model, column 1) to around 7% in the full models (columns 3 or 4).[21] This large between-schools variation on expectations is in line with models of sociocultural formation of expectations arguing that they are shaped by institutional structures (communities or schools).

However, the Indigenous-expectations association does not hold in the model where school controls are added (in column 4) to student's and family's covariates. In fact, only one estimate is statistically significant for the full specification (for indicator I2 - Panel B, column 4). Thus, net of the level of external school constraints, belonging to an Indigenous family is not a significant predictor of education expectations. This is further confirmed in the sub-sample matched analysis which includes more comparable samples for the Indigenous and non-Indigenous students' groups. The plot of propensity score densities before and after matching[22] (Figure 1) closely overlap after matching. Results for the matched sub-sample are shown in right part of Table 4 (columns 5 and 6). Most estimated OR for Indigenous groups are nearly one and also lack of statistically significance (either from the sub-sample constructed using level 1 or level 2 covariates).

Considering the above, as I found that Indigenous' schooling expectations are mostly explained away by external constraints, there is evidence against the internal channel hypothesis. In other words, the internalisation of discrimination towards Indigenous populations does not fully explain their lower confidence/beliefs of parents and in turn the weaker educational expectations for their children. A full set of results (included in the Appendix: Table A2) shows that socio-economic status, home supervision, school infrastructure and school type are the leading determinants of education expectations. This suggests that policies targeting expectations failure in Indigenous communities should, as a first marker of disadvantage, focus on rural public schools.

5.2. Education expectations and Indigenous learning

5.2.1. Main results

Are lower expectations of parents an additional barrier of learning for Indigenous children? This section attempts to answer this second research question using estimates from a three-level multilevel logit model (equation 2) for a categorical version of math and reading scores. Estimates for this model are included in Table 5, both from full samples (columns 1 to 6) and for matched sub-samples (columns 7 to 10). As stated above, estimates denote associations rather than causality. Various findings emerge from Table 5. First, estimates confirm the earlier finding of the literature (Rutchick et al., 2009; Sy & Schulenberg, 2005; Yamamoto & Holloway, 2010) that parental education expectations matter for student's achievement. But, here, the analysis confirms that the same linkage between expectations and learning also holds for the Latin America region. In comparison to the low expectation group, the OR for reaching higher levels of achievement (i.e., levels 3 and 4 of knowledge) in reading -net of students, family and school characteristics (full model, column 6)- are between 1.3 (medium expectations group) and 2.1 (high expectations group). This means that students whose parents have moderate and high expectations have a 30% and 200% more chances to reach top scores in reading (Panel A). Though for math (column 3),

only having higher expectations have significant effects; here the estimated odds ratio are bit smaller, around 1.65.

[*Table 5 here*]

Second, estimates for the full sample suggest that Indigenous students perform worse for math and reading than their counterparts (columns 3 and 6), both after accounting for full controls and for differences on education expectations between the two groups. Although for Indigenous definition I2 (mestizos, Panel B) OR are non-significant for math. Again, the most disadvantaged Indigenous group is I3 (Panel C) based on language, with OR of 0.197-0.120, perhaps underscoring the fact about Indigenous students' difficulty of accessing the curriculum in a second language and the importance of mastering the official Spanish and Portuguese languages for social integration through education. In contrast, for matched sub-samples (columns 7 to 10), which is the best approach to account for observable differences among the two groups, OR estimates are not statistically significant. Out of 12 estimates, only two estimates for the group Indigenous based on language (and for reading -columns 9 and 10) are statistically significant (at 10%). Therefore, as found for expectations in Section 5.1, external constraints (e.g., family SES, school type and location, etc.) as well as school learning heterogeneity (embodied by the estimated larger variance at level 2) seem to be explaining the Indigenous learning gap.

Third, estimates for the interaction term between Indigenous and expectations (bottom rows for each panel in Table 5) point towards mixed evidence, both in terms of statistical power and strength of effects. For the Indigenous definition I1 (Panel A), only a few estimates are statistical significant. The full sample estimates (columns 1 to 6) are above one (thereby Indigenous children learning benefiting from having parents with higher expectations), but for the matched sub-samples (columns 7 to 10) OR are below one. So, once differences on characteristics between Indigenous people and their counterparts are adjusted for through matching, expectations seem to be an additional source of learning inequality for Indigenous children (though most are non-statistically significant) relying on this Indigenous definition. However, results are slightly different for the other two Indigenous definitions. Estimates for the "mestizo" group (Panel B) suggest that expectations are not linked to higher chances of reaching top achievement in math (columns 7 and 8) but OR for reading are significant and large (2.016 and 1.824) (column 9), and while OR are all above one for category I3 based on language (Panel C) they are not statistically significant at conventional levels (columns 7 to 10).

As a whole, results seem to suggest that parental expectations equally affect the learning of Indigenous and non-Indigenous students, only being an additional source of disadvantage in the case of reading and for Indigenous mixed groups. Looking at the role of external barriers underlying the formation of educational prospects by Indigenous parents (and whether this varies across definitions of Indigenous groups) is therefore crucial. This is carried out in the following sub-section.

5.2.2. Heterogeneity effects in educational expectations Indigenous learning gaps

Knowing the role of different family and school constraints operating on the formation of Indigenous parents' educational expectations and their impact on children's learning is critical for policy targeting. In this section, I investigate children specific characteristics (such as ability, gender), family constraints (e.g., SES, parental education) and school features (school quality, peer effects) as potential pathways mediating

the association between parental expectations and learning. Results are presented in Table 6.

[*Table 6 here*]

I find that Indigenous girls are somewhat more affected by lower expectations (for math, Panel A). The OR for the interaction term for Indigenous boys (column 2) being slightly larger than for girls (column 1). Stronger evidence is found for ability, measured by earlier grade repetition. Medium or high expectations are linked to larger achievement for Indigenous children who are not repeaters (columns 2 and 4, OR $\approx$ 1.40 and statistically significant) but not in the case of Indigenous children who are repeaters (columns 1 and 3). Educational expectations seem to go hand in hand with increasing parental involvement in a child's education (measured by whether parents check a child's homework). Results show that more intensive involvement in children's academic activities also leads to larger achievement for Indigenous children (though the effect is only statistically significant for reading).

Similarly, estimates for family barriers (Panel B) offer some evidence that they are significant channels from expectations to increasing learning, especially if the Indigenous child's father is temporary employed and if his/her mother education is low. For instance, parental moderate/higher expectations would increase the probability of a child reaching top achievement by around 60% if the Indigenous child's father has a permanent job (columns 2 and 4, Panel B), but it wouldn't for a Indigenous child whose father is involved in temporal work. More educated Indigenous mothers are also more efficient to turn their higher expectations into a larger reading achievement for their children (OR $\approx$ 1.75-1.95), but not for the sample of low educated mothers (OR $\approx$ 0.90-100).

Perhaps surprisingly, school location (urban/rural) and school quality (captured by terciles of mean school achievement) do not seem to be meaningful channels of transition from expectations to learning (that is, in Panel C, all estimates lack statistical power). Yet estimates indicate that schools are important as a medium of formation of parental education expectations and how they are translated into larger achievement through peer effects for non-Indigenous peers (Panel D). The level of learning of Indigenous children attending schools where non-Indigenous parents have higher expectations is clearly benefitted as shown by the last row (interaction) estimates (with OR $\approx$ 1.5-1.6). But, conversely, parental expectations' peer effects with Indigenous peers seems counterproductive to raise Indigenous children learning (i.e., OR are below one: 0.664-0.701).

5.2.3. Robustness checks

The earlier estimated relationships of expectations with learning hinge on the assumption that Indigenous children from family with low and high expectations have the same distribution of unobservables. Thus, in this section, bounds in these associations are estimated to check if the earlier results are robust to the presence of unobservables. Based on Indigenous samples, two OLS regressions are carried out contrasting the effect on math and reading scores for the Indigenous parents groups of low expectations versus medium expectations, and also between the low versus high expectations groups, obtaining bounds for each of these relationships. Table 7 contains these results.

[*Table 7 here*]

Under the assumption of a relatively moderate importance of unobservables (that

is: unobservables = 0.30 × observables),[23] only the intervals for the first Indigenous indicator (I1, Panel A) include a zero effect for expectations on learning within its interval (both for the medium and high expectation groups). Estimates for the other two Indigenous classification, in Panels B and C, do not include zero within their intervals. Another relevant information from Table 7 to assess the robustness of results is the estimated value of δ under a null effect ($\beta = 0$). This indicates how much larger the role of unobservables would need to be to make the impact of expectations on learning equals to zero. If $\delta > 1$ estimates are robust to unobservables and conversely if $\delta < 1$. Estimates for δ are in general below 1 and larger for reading than for math (see column 5). Only for reading (and for Indigenous categories I2 and I3) intervals do not include zero as well as $\delta > 1$, thereby suggesting mixed evidence in terms of the robustness of results when unobservables are considered. In other words, in some cases there are null effects from expectations to learning and in others positive effects are supported.

Furthermore, I re-estimate the relationship for the second research question using a continuous learning scores as dependent variables to assess the robustness of estimates of Table 5 (which are based on a dichotomous version of learning). The difference in the formulations of the dependent variable is that logit estimates measure the effect of expectations at the top of the distribution (for high achievers against low achievers) whilst for the linear version the impact measured is for the average performer. Results are shown in the Appendix (Table A3) using a linear three-level multilevel model. Most of the three findings from Table 5 are still valid: for all students, expectations are negatively correlated to learning scores; there is an Indigenous learning gap after accounting for observables differences with the non-Indigenous group in matched sub-samples; and lower parental educational expectations affect Indigenous students proportionally more, but in few cases which are not all the same cases as in Table 5. In comparison to students whose parents have lower expectations, students whose parents have medium and high expectations learning scores are, on average, 17 and 25 higher (Panel A, columns 3 and 6), as well as based on matched samples (columns 8 and 10), and the most disadvantaged group is when Indigeneity is linked to language (group I3, Panel C). For the coefficient δ of the interaction term ($I_{ijk} \times e_{ijk}$) there is a shift towards significant effects for the medium expectations group and for the Indigenous definition I1 (panel A).

6. Conclusions

This paper used a recent learning survey (TERCE) to examine the role of education expectations among Indigenous populations in Latin America based on 12 countries, taking stock for the post 2015 development agenda (in relation to monitoring education disparities within SDG 4 on education) as to whether parental education expectations is a mechanism of transferring intergenerational disadvantages to Indigenous children by halting their learning. Empirical evidence on this is important because, despite recent economic growth in the region between 2000-2010, poverty traps seem to have increased across Indigenous groups. Given the complexity behind what constitutes being Indigenous, which tends to take on different meanings in different contexts and varies over time, the paper relied on three alternative definitions for classifying children as Indigenous: based on both parents being Indigenous, one parent is Indigenous (mestizo) and based on spoken language at home. The channels explored within the expectations-learning association were twofold: (i) an 'internal' channel where discrim-

ination against Indigenous people leads to the internalisation of lower expectations, and (ii) an 'external' channel as Indigenous populations tend to live in remote locations with poor infrastructure and constrained schooling opportunities.

First, I found that children's education expectations from Indigenous parents are lower than those from non-Indigenous parents but, once the external constraints are accounted for (at the family and school levels), Indigenous' negative expectations gaps tend to disappear. A similar result was found when using matched sub-samples for Indigenous and non-Indigenous groups. Consequently, I found no clear evidence supporting the internal channel as initial expectations gaps among these two groups seem to be mostly explained away by external constraints. It should be noted that the same result is found by Pasquier-Doumer and Brandon (2015) for Peru. Moreover, the multilevel analysis indicated a significant between-school variation on expectations (around 32% in the null model, for instance) highlighting the role of schools in the formation of children's education expectations.

Second, based on multilevel estimates from matched sub-samples, I found that parental education expectations matter for student's achievement and that the validity of an internal channel (where Indigenous children perform worse than non-Indigenous children net of a wide range of characteristics) only holds for those children who are classified as Indigenous based on language (and for reading). As far as the educational expectations and their associations with the Indigenous learning gaps is concerned, I found, too, slightly more nuanced evidence based on matched-sub-samples which depends on the learning score and the Indigenous definition used. On the whole, parental expectations seem to affect both the learning of Indigenous and non-Indigenous children groups, with a larger impact for Indigenous children only for reading (and for the mestizo category).

Taken together, these two set of results highlight the importance of context or the external channel on the formation and transition of educational expectations towards Indigenous children's learning. This was further supported by the empirical relevance I found for some key channels at the family level (e.g., father's work and mother's education) as well as for some channels at the school level (e.g., school peer effects shaping educational expectations).

All in all, from the point of view of educational expectations, exclusion mechanisms on Indigenous students in Latin America appear to be operating more at a social than a cultural level, which is in line with Ray (2006) model where aspirations are socially determined in relationship to the lives of similar individuals, and by the interplay of the proximal context (say the family) and external barriers. For instance, low parental involvement/input for Indigenous children's educational activities would be affected by a low family socio-economic background, plus the weak productivity of these activities due to low level of parental education, but the gap on learning is likely to be amplified if parental educational expectations are low, on average, across schools. In turn, school expectations would be weak if schools' infrastructure is scanty and their teaching quality is poor. Indeed, prior research for the region (Ames, 2005; Treviño, 2006, 2007) has shown that Indigenous students attend schools with less qualified teachers and constrained financial resources, highlighting the fact that working conditions in Indigenous schools are worse than in regular schools (Santibañez, 2016).

Even though studies on the attribution of different factors to the Indigenous learning gap, the family context appears as a strong determinant (see, for instance, Hernandez-Zavala et al., 2006) here, when parental education expectations are brought into the analysis, I found that overall, schools' characteristics have a larger weight on the expectations-learning association (by rendering initial significant associations with in-

dividuals' controls to have no statistical power). This finding, in turn, is more aligned to other studies (e.g., McEwan & Trowbridge, 2007) suggesting that most of the variation in the Indigenous learning gap could be explained by the extent of poverty in schools and their teacher resources, rather than by individual and family characteristics of Indigenous students.

The paper suggests two kinds of implications. On the one hand, an overreaching/conceptual implication is that, a debate about Indigenous people within the SDG agenda should incorporate the role of schooling expectations as a source of learning-inequality, but a qualified debate would require further evaluations relaying on supplementary information on how expectations are constructed in schools as a social process. This is why not having a more refined indicator for capturing educational supply in the TERCE dataset is a limitation of the current paper to assess the above claims and to offer additional insights about the external channel. Consequently, a practical implication from the paper is that a more robust analysis of Indigenous learning-expectations would need granular information on measures such as teachers' stock and quality, access, and post-secondary education opportunities in relation to the sampled communities, especially for communities where the prevalence of Indigenous populations is high. An example of this kind of data is given by the recent article by Santibañez (2016) which links data from various sources (schools, teachers and learning sources) to investigate the role of intercultural bilingual education (IBE) on the Indigenous achievement gap in Mexico.

On the other hand, some concrete policy implications from the paper are in terms of targeting, the definition of Indigeneity more closely tied to inequality and, related to this, which is the scope and empirical support for an IBE model (a model which has found support in the region for raising access: Parker, Rubalcava, & Teruel, 2005). To begin with, as far as the findings for the Indigenous expectations gap is concerned, results suggest that identifying pockets of expectations failure in Indigenous communities is important, and policies should be designed using parameters which are beyond individuals and family characteristics (as the gap persisted after accounting for them) by targeting communities based on schools' characteristics; for instance, targeting public-rural schools with weak infrastructure can be a starting point. This is in line with, but at a regional level, of a much earlier finding by Epstein (1971) on the link between location and the need for assimilations and adoption of 'criollo' customs from rural Indigenous in Peru (Tyler et al., 2014). But the significant variation of expectations across schools I found requires, within these school makers, specific policies and further investigation -a suggestion highlighted also by earlier research on students' expectations and educational returns in Peru (Post, 1985).

Importantly, when it comes to the expectations-learning association, the analysis suggests that targeting Indigenous students based on some of their individual's markers of disadvantage (that is, initial ability/repetition, low parental education input, parents' work stability and education) acting as barriers for increasing expectations to be translated into increasing learning, could still be beneficial for narrowing the Indigenous learning gap in its relationship to expectations. Some of these markers (parental education, time spent doing homework with parents) have also been found to be the most important factors in narrowing the achievement gap between Indigenous and non-Indigenous children in a recent study for Peru (see: Arteaga & Glewwe, 2017). So, policies alleviating socioeconomic constraints faced by Indigenous people would contribute to enhancing their aspirations, counterbalancing the negative effects of unstable household income and low parental education. Raising schools' overall level of educational expectations of parents, too, could benefit Indigenous students

through peer effects, thereby the importance of policies emphasising the importance of continuing education in schools with large prevalence of Indigenous students.

Moreover, policy makers should focus their efforts on Indigenous students who speak Aboriginal languages at home, as it is for this group where the internal channel or discrimination hypothesis has some sort of validity. For this minority language group IBE has the potential of lowering gaps on achievement, particularly during the first grades of primary levelling the playing field against non-Indigenous peers, helping this group to make a better transition into either the Spanish or Portuguese curriculum. This, in turn, could help to reduce discrimination and promote Indigenous culture and values through students' engagement (Coronel-Molina & McCarty, 2016; Cortina, 2013; Hall & Patrinos, 2012). But IBE policy should be effectively implemented. As shown by Santibañez (2016) in Mexico, a weak IBE implementation would limit its potential; an effective IBE policy should have as a core a steady qualified supply of teachers who are also fully language-compatible.

Acknowledgements

I would like to thank UNESCO (Santiago) for kindly providing the TERCE data on which this analysis is based. Seminar participants at the UKFIET 2017 conference and at the Centre for International Education (CIE) of the University of Sussex Research Cafe (2017) provided useful feedback. I would also like to thank two anonymous referees for the constructive comments and recommendations which greatly improved the quality of the paper. All errors are my own.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes

1. Following the recommendation of scholars in this field, I have capitalise the "Indigenous". The reason to capitalise the words "Indigenous" (as well as "Indigeneity" and "Aboriginal") is to identify unique, ethnic communities with political representation and international presence and a proper name for a group of people and any aspects of their culture. See, for instance: https://www.naja.com/sites/naja/uploads/images/2017/NAJA_Style_Guide.pdf.

2. More information on the rights and for a historical overview of the UN rights to Indigenous people, see: http://.un.org/development/desa/Indigenouspeoples/declaration-on-the-rights-of-Indigenous-peoples.html.

3. For further details on the educational rights for Indigenous people, see: (Del Popolo, 2017, p. 374-385).

4. See: http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf (p. 7).

5. See: http://un.org/development/desa/Indigenouspeoples/ (Accessed 5/3/2018).

6. These are: indicator 1.4.2 (proportion of total adult population with secure tenure rights to land) and indicator 5.a.1 (women's disadvantages in ownership of and rights to agricultural land). http://fao.org/sustainable-development-goals/indicators/5a1/en/ (Accessed 5/3/2018).

7. For details on the whole set of targets and indicators of Goal 4 on education, see: http://sustainabledevelopment.un.org/sdg4.

8. For instance, some studies argue that the use of language in demographic data on Indigenous groups is in decline (only being used in Peru), indicating that: "self-identification not only reasserts Indigenous peoples' agency to decide their forms of adscription, but it also allows accounting for the changing and historically specific character of Indigeneity" (World Bank, 2015, p. 22), while "elevating language as a defining criterion of Indigeneity might paradoxically reinforce and deepen the level of economic and social vulnerability" (World Bank, 2015, p. 21). However, others studies stress that "language is a right and an essential part of the ethnic identity" (Del Popolo, 2014, p. 89), being an objective ethnic markers (Reimão & Taş, 2017; Taş, Reimão, & Orlando, 2014).

9. See Table II.1 (p. 37) in Del Popolo (2014).

10. For example, less than 5% of rural Indigenous youth (aged 20-29) in Brazil, Colombia, Nicaragua and Panama have 13 or more years of education (SITEAL, 2011), and in Mexico and Ecuador there is a gap of nearly 3 years of education between Indigenous and non-Indigenous in the same age group, while for Panama and Venezuela the gap is above 4 years (Del Popolo, 2017).

11. This is linked to aspiration failure conceptualisation of Pasquier-Doumer and Brandon (2015), and related literature therein.

12. For other publications, see: https://www.younglives.org.uk/content/publications-0.

13. Source: SEDLAC (World Bank and CEDLAS): http://blogs.worldbank.org/opendata/why-are-Indigenous-peoples-more-likely-be-poor.

14. For a detailed review, see: Yamamoto and Holloway (2010).

15. A four (unexplored) category is one where Indigeneity is defined by combining I1 and I3, that is, where both parents define themselves as Indigenous and speak an Indigenous language at home. Because around 84% of those parents who define themselves as Indigenous do not speak Indigenous languages at home (likely to be due to recent increasing language assimilation as well as under-reporting), I don't rely on this definition for the empirical analysis.

16. Country estimates are included in the Appendix. Rates of Indigenous people considerably vary across the sample: from 91% (GTM), 43% (PER) and 30% (PER) to 12% (ARG, BRA) and 8% (COL) (Table A1, column 1).

17. There is large heterogeneity on this probability gap across the region (see Table A1), ranging from 1% to 38% (math, column 3) and from 4%-21% (reading, column 5).

18. I employ a 2-level model here because of convergence problem under a 3-level formulation (students, schools and countries). Country heterogeneity is accounted for by using country dummies.

19. Similar covariates are used as for equation (1). Some additional explanatory variables for the estimation of equation (2) are educational inputs for students (notebook) and demographic variables (whether the student lives with both parents and number of children at home), an index of involvement on educational activities from parents, school enrolment and head masters and teacher variables (years of experience, specialisation courses, education level).

20. For an example following this bounding approach in the context of school violence and learning using TERCE, see: Delprato, Akyeampong, and Dunne (2017)

21. A likelihood ratio (LR) test of the current model against an standard ordered logit leads, in all cases, to a rejection of the null that both the multilevel and standard models are the same. The multilevel specification choice is therefore supported. The same applies to results of Section 5.2.

22. Estimates for bias covariates reduction after matching, t-tests and other statistics related to the quality of matching can be obtained from the author upon request.

23. Note that this cut-off point is derived by Oster (2016) based on larger number of papers using randomised treatment evaluations.

References

Ames, P. (2005). When access is not enough: Educational exclusion of rural girls in peru. *Beyond access: Transforming policy and practice for Gender Equality in Education*, 149–166.

Ames, P. (2012). Language, culture and identity in the transition to primary school: Challenges to indigenous children's rights to education in peru. *International Journal of Educational Development*, *32*(3), 454–462.

Ames, P. (2013). Constructing new identities? the role of gender and education in rural girls' life aspirations in peru. *Gender and education*, *25*(3), 267–283.

Arteaga, I., & Glewwe, P. (2017). Do community factors matter? an analysis of the achievement gap between indigenous and non-indigenous children in peru. *International Journal of Educational Development*.

Bauer, K. (2016). Land versus territory: Evaluating indigenous land policy for the mapuche in chile. *Journal of Agrarian Change*, *16*(4), 627–645.

Black, S. E., & Devereux, P. J. (2010). *Recent developments in intergenerational mobility* (Tech. Rep.). National Bureau of Economic Research.

CEPAL, e. a. (2012). The rights of indigenous children.

Chevalier, A., Harmon, C., O'Sullivan, V., & Walker, I. (2013). The impact of parental income and education on the schooling of their children. *IZA Journal of Labor Economics*, *2*(1), 8.

Chong, A., & Ñopo, H. (2008). The mystery of discrimination in latin america. *Economía*, *8*(2), 79–107.

Coronel-Molina, S. M., & McCarty, T. L. (2016). *Indigenous language revitalization in the americas*. Routledge.

Cortina, R. (2013). *The education of indigenous citizens in latin america* (Vol. 95). Multilingual Matters.

Creamer, J. (2016). Far from the tree: How do parents contribute to their children's psychosocial competencies throughout childhood?

Crivello, G. (2009). *'becoming somebody': Youth transitions through education and migration–evidence from young lives, peru*. Young Lives.

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. *Journal of family psychology*, *19*(2), 294.

Del Popolo, F. (2014). Guaranteeing indigenous people's rights in latin america. progress in the past decade and remaining challenges. summary.

Del Popolo, F. (2017). *Los pueblos indígenas en américa (abya yala): desafíos para la igualdad en la diversidad*. Libros de la CEPAL, N 151 (LC/PUB.2017/26), Santiago, Comisión Económica para América Latina y el Caribe (CEPAL).

Delprato, M., Akyeampong, K., & Dunne, M. (2017). The impact of bullying on students' learning in latin america: A matching approach for 15 countries. *International Journal of Educational Development*, *52*, 37–57.

ECLAC. (2014). Guaranteeing indigenous people's rights in latin america.

Epstein, E. H. (1971). Education and peruanidad:" internal" colonialism in the peruvian highlands. *Comparative Education Review*, *15*(2), 188–201.

Escobal, J., & Ponce, C. (2007). Economic opportunities for indigenous people in rural and urban peru. In *Conference edition: Economic opportunities for indigenous peoples in latin america.*

Freire, G. e. a. (2015). Indigenous latin america in the twenty-first century : the first decade. , *Working Paper no 98544*.

Genicot, G., & Ray, D. (2017). Aspirations and inequality. *Econometrica*, *85*(2), 489–519.

Glick, J. E., & White, M. J. (2004). Post-secondary school participation of immigrant and native youth: The role of familial resources and educational expectations. *Social science research*, *33*(2), 272–299.

Goldenberg, C., Gallimore, R., Reese, L., & Garnier, H. (2001). Cause or effect? a longitudinal study of immigrant latino parents' aspirations and expectations, and their children's school performance. *American Educational Research Journal*, *38*(3), 547–582.

Guerrero, G., Sugimaru, C., Cussianovich, A., De Fraine, B., & Cueto, S. (2016). Education aspirations among young people in peru and their perceptions of barriers to higher education.

Hall, G. H., & Patrinos, H. A. (2012). *Indigenous peoples, poverty, and development*. Cambridge University Press.

Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as reference points. *Cognitive psychology*, *38*(1), 79–109.

Hernandez-Zavala, M., Patrinos, H. A., Sakellariou, C., & Shapiro, J. (2006). *Quality of schooling and quality of schools for indigenous students in guatemala, mexico, and peru*. The World Bank.

Jeynes, W. H. (2007). The relationship between parental involvement and urban secondary school student academic achievement: A meta-analysis. *Urban education*, *42*(1), 82–110.

Levitan, J., & Post, D. (2017). Indigenous student learning outcomes and education policies in peru and ecuador. In *Indigenous education policy, equity, and intercultural understanding in latin america* (pp. 27–49). Springer.

Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current directions in psychological science*, *15*(5), 265–268.

MacIsaac, D. J., & Patrinos, H. A. (1995). Labour market discrimination against indigenous people in peru. *The Journal of Development Studies*, *32*(2), 218–233.

Manrique, N. (1999). Algunas reflexiones sobre el colonialismo, el racismo y la cuestión nacional. *La Piel y la Pluma: Escritos Sobre Literatura, Étnicidad y Racismo*.

McEwan, P. J., & Trowbridge, M. (2007). The achievement of indigenous students in guatemalan primary schools. *International journal of educational development*, *27*(1), 61–76.

Montero, C., Oliart, P., Ames, P., Cabrera, Z., Uccelli, F., et al. (2001). La escuela rural: modalidades y prioridades de intervención.

Oster, E. (2016). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics*, *forthcoming*.

Parker, S. W., Rubalcava, L., & Teruel, G. (2005). Schooling inequality and language barriers. *Economic Development and Cultural Change*, *54*(1), 71–94.

Pasquier-Doumer, L. (2002). La evolución de la movilidad escolar intergeneracional en el perú a lo largo del siglo xx. *Bulletin de l'Institut français d'études andines*(31 (3)), 429–471.

Pasquier-Doumer, L., & Brandon, F. R. (2015). Aspiration failure: a poverty trap for indigenous children in peru? *World Development*, *72*, 208–223.

Patrinos, H. A. (2000). The cost of discrimination in latin america. *Studies in Comparative International Development*, *35*(2), 3–17.

Patrinos, H. A., & Skoufias, E. (2007). *Economic opportunities for indigenous peoples in latin america*. International Bank for Reconstruction and Development.

Pomerantz, E. M., Moorman, E. A., & Litwack, S. D. (2007). The how, whom, and why of parents' involvement in children's academic lives: More is not always better. *Review of educational research*, *77*(3), 373–410.

Post, D. (1985). Student expectations of educational returns in peru. *Comparative Education Review*, *29*(2), 189–203.

Post, D. (1994). Through a glass darkly? indigeneity, information, and the image of the peruvian university. *Higher Education*, *27*(3), 271–295.

Ray, D. (2006). Aspirations, poverty, and economic change. *Understanding poverty*, *409421*.

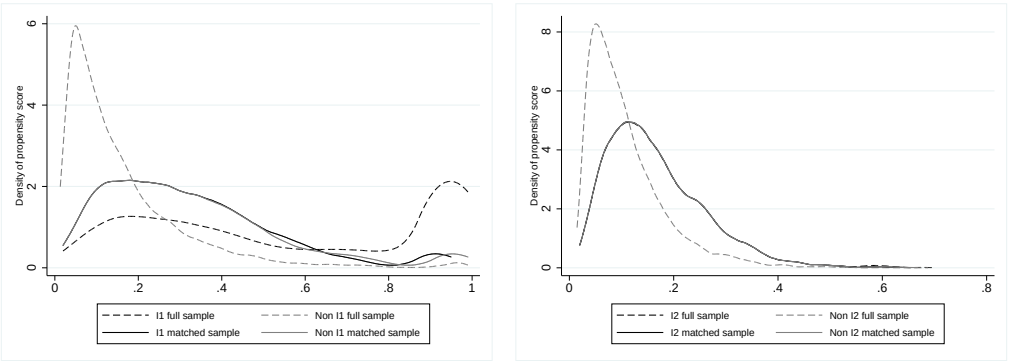
Reimão, M. E., & Taş, E. O. (2017). Gender education gaps among indigenous and non-indigenous groups in bolivia. *Development and Change*, *48*(2), 228–262.

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41–55.

Rosenbaum, P. R., & Rubin, D. B. (1984). Reducing bias in observational studies using

subclassification on the propensity score. *Journal of the American statistical Association*, *79*(387), 516–524.
Rutchick, A. M., Smyth, J. M., Lopoo, L. M., & Dusek, J. B. (2009). Great expectations: The biasing effects of reported child behavior problems on educational expectancies and subsequent academic achievement. *Journal of Social and Clinical Psychology*, *28*(3), 392.
Santibañez, L. (2016). The indigenous achievement gap in mexico: The role of teacher policy under intercultural bilingual education. *International Journal of Educational Development*, *47*, 63–75.
SITEAL. (2011). La educación de los pueblos indígenas y afrodescendientes. informe sobre tendencias sociales y educativas en américa latina. *Information System on Educational Trends in Latin America*.
Stocks, A. (2005). Too much for too few: problems of indigenous land rights in latin america. *Annu. Rev. Anthropol.*, *34*, 85–104.
Sy, S., & Schulenberg, J. (2005). Parent beliefs and children's achievement trajectories during the transition to school in asian american and european american families. *International Journal of Behavioral Development*, *29*(6), 505–515.
Taş, E. O., Reimão, M. E., & Orlando, M. B. (2014). Gender, ethnicity, and cumulative disadvantage in education outcomes. *World Development*, *64*, 538–553.
Telles, E., & Bailey, S. (2013). Understanding latin american beliefs about racial inequality. *American Journal of Sociology*, *118*(6), 1559–1595.
Treviño, E. (2003). Expectativas de los docentes en aulas con estudiantes indígenas en bolivia, méxico y perú. *Revista Latinoamericana de Estudios Educativos (México)*, *33*(2).
Treviño, E. (2006). Evaluation of the learning of indigenous students in latin america: Challenges of measurement and interpretation in contexts of cultural diversity and social inequality. *Revista Mexicana de Investigación Educativa*, *11*(28), 225–268.
Treviño, E. (2007). El caso de las primarias indıgenas. in la educacion para poblaciones en contextos vulnerables.
Tyler, L., Castro, M. H. D. M., Bull, H. C., Kent, R., Levy, D. C., Mollis, M., ... Altbach, P. G. (2014). *Higher education in latin american*. Routledge.
UNESCO. (2016). *Education for people and planet: Creating sustainable futures for all*. Paris, France.
UNESCO-LLECE. (2010). Factores asociados al logro cognitivo de los estudiantes de américa latina y el caribe.
UNESCO-OREALC. (2015a). Terce. cuestionario del estudiante 6.
UNESCO-OREALC. (2015b). Terce. informe de resultados. logros de aprendizaje. cuadernillo no 2.
UNESCO-OREALC. (2016). Reporte técnico. tercer estudio regional comparativo y explicativo, terce.
Unicef, Andes, F., et al. (2009). Atlas sociolingüística de los pueblos indígenas en américa latina. *Cochabamba, Bolivia*.
Van Cott, D. L. (1994). *Indigenous peoples and democracy in latin america*. St. Martin's Press.
Van Dijk, T. (2001). Discurso y racismo. *The Blackwell Companion to Racial and Ethnic Studies*.
Van Dijk, T. (2003). *Dominación étnica y racismo discursivo en españa y américa latina: América latina*. Editorial Gedisa.
Wade, P. (2010). *Race and ethnicity in latin america*. Pluto press.
Weiner, B. (2005). Motivation from an attribution perspective and the social psychology of perceived competence. *Handbook of competence and motivation*, 73–84.
World Bank, . (2015). Indigenous latin america in the twenty-first century : The first decade.
Yamamoto, Y., & Holloway, S. D. (2010). Parental expectations and children's academic performance in sociocultural context. *Educational Psychology Review*, *22*(3), 189–214.
Zavala, V., Robles, A. M., Trapnell, L., Zariquiey, R., Ventiades, N., & Ramírez, Á. (2007). *Avances y desafíos de la educación intercultural bilingüe en bolivia, ecuador y perú: estudio*

de casos. CARE Perú, IBIS.



(a) Both parents are Indigenous (I1). (b) One parent is Indigenous (I2).

Figure 1. Overlap of the propensity scores for Indigenous groups before and after matching.

Table 1. Prevalence of Indigenous populations, parental education expectations and achievement (grade 6)

	Indigenous definitions						
	I1 - Both parents are Indigenous	I2 -One parent is Indigenous	I3 - Based on language	I4- Mother is Indigenous, father is non-Indigenous	I5 - Student Indigenous, self report	NI - Both parents are non-Indigenous	NRI - Student not recognise being Indigenous
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A - Prevalence - Indigenous	0.280	0.174	0.073	0.101	0.124	0.720	0.568
N	40,877	35,649	31,751	32,761	43,403	40,877	12,448
Panel B - Parent education expectations							
Low	18.19	15.22	27.85	15.13	20.86	7.52	15.37
Medium	37.98	37.46	39.8	37.39	39.26	28.21	36.82
High	43.83	47.32	32.35	47.48	39.89	64.26	47.82
Panel C - Achievement							
Math							
level - high	10.22	13.21	3.29	13.23	9.56	25.32	12.40
score	673.7	684.9	624.6	685.6	665.8	726.9	684.4
Reading							
level- high	16.70	20.93	4.72	20.55	15.31	38.90	19.74
score	666.8	681.1	603.3	680.8	654.7	729.8	679.9

Notes: (1) All Indigenous categories' definitions are based on questions to parents on their ethnicity (i.e., parental questionnaire) expect from category I5 which is based on the students' answers (student questionnaire). I3 is defined by parental answers to the language they speak the with the child at home most of the time (0= Spanish or Portuguese, 1 = other Indigenous languages). NI is the complement of category I1 –any of the parents are Indigenous. The NRI category comprises those students who reply they are not Indigenous (complement of category I5) but both parents are by parental answers measured by category I2 (UNESCO-OREALC, 2015a). (2) Parental expectations on the educational level the child would reach are: low (primary or lower secondary), medium (upper secondary or post-secondary -no tertiary, or short cycle tertiary), and high (full tertiary, master or doctorate). (3) Achievement levels are defined in relationship to what students know and are capable of. For math (level 1: score $\leq$ 685; level 2: 686 $\leq$ score $\leq$ 788; level 3: 789 $\leq$ score $\leq$ 877; level 4: score $\geq$ 878), and for reading (level 1: score $\leq$ 612; level 2: 613 $\leq$ score $\leq$ 745; level 3: 755 $\leq$ score $\leq$ 809; level 4: score $\geq$ 810). The high-level group takes the value of 1 for those who reach levels 3 or 4, and 0 otherwise (UNESCO-OREALC, 2015b).

Table 2. Distribution of achievement by parental education expectations

	Indigenous definition											
	I1 - Both parents are Indigenous			I2 -One parent is Indigenous			I3 - Based on language			NI - Both parents are non-Indigenous		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Math level - high	0.03	0.07	0.16	0.05	0.10	0.18	0.01	0.04	0.05	0.10	0.16	0.31
score	635.8	664.0	697.8	646.5	675.7	704.5	602.6	627.7	639.8	673.3	698.9	745.5
Reading level - high	0.05	0.12	0.26	0.05	0.15	0.30	0.01	0.03	0.09	0.13	0.24	0.48
score	616.4	655.4	697.5	627.2	668.4	708.6	574.0	604.5	627.0	660.1	695.0	753.2

Notes: (1) See notes in Table 1 for details on the definition of Indigenous categories and learning levels.

Table 3. Differences between Indigenous and non-Indigenous students for key independent variables

	I1 - Both parents are Indigenous	NI - Both parents are non-Indigenous	Difference
	(1)	(2)	(3)
Student			
Age	12.74	12.24	0.50***
Girl	0.49	0.50	-0.02***
Repeat	0.28	0.16	0.12***
Missed classes (%)	0.20	0.20	-0.01
Preschool attendance	0.73	0.82	-0.09***
Study time (at least 1 hour)	0.69	0.69	0.01
Writing book	0.67	0.73	-0.05***
Nuclear family	0.87	0.84	0.03***
# children at home	3.63	2.95	0.69***
Work	0.62	0.40	0.21***
Family			
Wealth index	-0.61	0.24	-0.85***
Father education	2.58	3.26	-0.69***
Mother education	2.41	3.20	-0.79***
# books	2.86	3.60	-0.75***
Study supervision index	-0.17	0.05	-0.22***
Involvement in school index	0.00	0.02	-0.02
School			
Public	0.82	0.59	0.23***
Urban	0.40	0.73	-0.32***
# of students	327.5	393.5	-66.08***
Infrastructure index	-0.37	0.42	-0.79***
# books in the library	3.61	3.51	0.10***
# connected PC	1.87	2.89	-1.02***
Headteacher - years of experience	8.75	9.75	-1.00***
Headteacher - additional courses	0.55	0.69	-0.13***
Quality classroom index	-0.18	0.08	-0.26***
Teacher assistant and punctuality index	0.07	0.01	0.06***
Teacher - years of experience	4.53	4.58	-0.05***
Teacher - education level	3.12	3.64	-0.52***

Notes: (1) For details on indices construction and other variables see UNESCO-OREALC (2016), chapter 7. Significance levels: * 10%, ** 5%, *** 1%.

Table 4. Estimates (odds ratio - OR) for the impact of different definitions of Indigenous on parental education expectations - ordered logit (multilevel)

	Ordered logit				Matched sub-sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Both parents are Indigenous (I1)						
Indigenous OR	0.702***	0.725***	0.932*	0.973	0.969	0.969
cut1	-2.179***	-5.248***	-2.502***	-2.725***		
cut2	0.0736	-2.778***	0.0933	-0.127		
variance level 2	1.574***	1.347***	0.275***	0.236***		
N schools	2,325	2,280	2,263	2,263		
N	40,877	31,269	26,869	26,869	8,909	8,783
Panel B - One parent is Indigenous (I2)						
Indigenous OR	0.680***	0.706***	0.847***	0.858***	0.905	0.912
cut1	-2.201***	-5.067***	-2.673***	-2.898***		
cut2	0.0882	-2.569***	-0.0101	-0.231***		
variance level 2	1.563***	1.327***	0.261***	0.228		
N schools	2,248	2,150	2,053	2,053		
N	35,649	26,836	22,247	22,247	5,104	5,099
Panel C - Based on language (I3)						
Indigenous OR	0.418***	0.415***	0.850*	0.913	0.807**	0.875
cut1	-2.195***	-5.154***	-2.471***	-2.705***		
cut2	0.0863	-2.654***	0.165	-0.0657		
variance level 2	1.534***	1.340***	0.287***	0.253***		
N schools	2,222	2,147	2,110	2,110		
N	31,751	24,278	20,783	20,783	1,760	1,775
Student controls	NO	YES	YES	YES		
Family controls	NO	NO	YES	YES		
School controls	NO	NO	NO	YES		
Matched sub-sample: student, family characteristics					YES	YES
Matched sub-sample: school characteristics					NO	YES

(1) Students controls are: age, gender, repetition, missed class, attended preschool, study time and work. Family controls: socio-economic status, father and mother education, number of books and supervision (index). School controls: school type, location, infrastructure, number of books and PCs with internet connectivity. (2) Ordered logit estimates are from a two-level multilevel specification (level 1: students; level 2: schools) with country dummies. (3) Matched sub-samples are obtained by propensity score matching (1 to 1 nearest neighbour, no replacement) and the 'treated' population is given by the indicators I1, I2 and I3 and the 'untreated' population is given by those students whose any parent is Indigenous. Significance levels: * 10%, ** 5%, *** 1%.

Table 5. Estimation of the impact of different definitions of Indigenous on learning by parental education expectations. Multilevel logit (3-levels), odds ratio.

	Full sample						Matched sub-sample			
	Math			Reading			Math		Reading	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A - Both parents are Indigenous (I1)										
education expectation medium	1.448***	1.086	1.073	1.782***	1.411***	1.345***	1.858***	1.611*	1.910***	2.465***
education expectation high	2.998***	1.717***	1.644***	4.174***	2.235***	2.066***	4.608***	4.215***	5.937***	8.442***
Indigenous	0.500***	0.740	0.601**	0.536***	0.659**	0.650**	1.083	0.752	0.864	1.175
Indigenous x education expectation medium	1.334	1.198	1.528*	1.190	1.172	1.196	0.775	1.177	0.899	0.663
Indigenous x education expectation high	1.352*	1.100	1.412	1.039	1.078	1.149	0.774	1.143	0.856	0.606*
variance level 3	1.163	0.728	0.671	0.512	0.212	0.169	1.276	1.194	0.488	0.500
variance level 2	1.336	0.553	0.441	1.139	0.282	0.220	1.340	1.347	0.766	0.912
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,325	2,280	2,263	2,325	2,280	2,263	1964	1781	1964	1781
N	40,877	26,869	24,724	40,877	26,869	24,724	8890	7951	8890	7951
Panel B - One parent is Indigenous (I2)										
education expectation medium	1.451***	1.089	1.094	1.773***	1.400***	1.335***	1.469	1.651	1.430*	1.972***
education expectation high	3.032***	1.748***	1.726***	4.187***	2.242***	2.098***	4.954***	3.997***	4.498***	4.846***
Indigenous	0.704**	0.914	0.932	0.420***	0.500**	0.531**	1.107	1.171	0.450**	0.570
Indigenous x education expectation medium	1.004	1.072	1.053	1.574**	1.726*	1.555	0.968	0.797	2.016**	1.250
Indigenous x education expectation high	0.938	0.977	0.969	1.481**	1.592	1.578	0.787	0.933	1.824*	1.643
variance level 3	1.192	0.736	0.695	0.507	0.215	0.170	1.106	1.157	0.470	0.469
variance level 2	1.287	0.519	0.416	1.031	0.309	0.242	0.942	0.821	0.741	0.806
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,248	2,150	2,053	2,248	2,150	2,053	1759	1588	1759	1588
N	35,649	22,247	20,391	35,649	22,247	20,391	5097	4684	5097	4684
Panel C - Based on language (I3)										
education expectation medium	1.462***	1.080	1.084	1.820***	1.408***	1.346***	4.189*	3.351	1.479	1.739
education expectation high	3.085***	1.703***	1.670***	4.364***	2.234***	2.090***	6.407**	5.460**	4.999***	6.969***
Indigenous	0.107***	0.172**	0.197**	0.131***	0.169***	0.120***	0.481	0.384	0.292*	0.214*
Indigenous x education expectation medium	2.696**	4.713**	4.540**	1.380	2.434	3.705*	0.971	1.074	1.943	2.208
Indigenous x education expectation high	2.366*	3.433	3.246	1.786	2.800*	4.122*	1.495	2.165	1.951	2.599
variance level 3	1.114	0.694	0.661	0.504	0.212	0.177	2.181	2.246	1.316	0.964
variance level 2	1.247	0.508	0.418	1.049	0.287	0.228	3.231	4.198	1.055	1.771
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,222	2,147	2,110	2,222	2,147	2,110	712	655	712	655
N	31,751	20,783	19,096	31,751	20,783	19,096	1740	1668	1740	1668
Student controls	NO	YES	YES	NO	YES	YES				
Family controls	NO	YES	YES	NO	YES	YES				
School controls	NO	NO	YES	NO	NO	YES				
Matched sub-sample: student, family characteristics							YES	NO	YES	NO
Matched sub-sample: student, family and school characteristics							NO	YES	NO	YES

Notes: (1)Students controls are: age, gender, repetition, missed class, attended preschool, study time and work. Family controls: socio-economic status, father and mother education, number of books and supervision (index). School controls: school type, location, infrastructure, number of books and PCs with internet connectivity. (2) Logit estimates are based on a three-level multilevel structure (level 1: students; level 2: schools and level 3 countries). (3) Matched sub-samples are obtained by propensity score matching (1 to 1 nearest neighbour, no replacement) and the 'treatment' is given by the indicators I1, I2 and I3 and the 'untreated' population those student with neither parent is Indigenous. Propensity scores are estimated using the list of variables of Table 3. Significance levels: * 10%, ** 5%, *** 1%.

Table 6. Indigenous and interactions with education expectations impact on learning heterogeneity. Multilevel logit (3-levels), odds ratio

	Math		Reading	
	Yes	No	Yes	No
	(1)	(2)	(3)	(4)
Panel A - Student				
Girl				
Indigenous	0.523***	0.412***	0.429***	0.504***
Indigenous x education expectation medium	1.143	1.483	1.355	1.101
Indigenous x education expectation high	1.158	1.526*	1.218	0.986
Repeat				
Indigenous	0.603	0.481***	0.853	0.441***
Indigenous x education expectation medium	1.014	1.402*	0.71	1.433**
Indigenous x education expectation high	0.748	1.433*	0.638	1.24
Homework checked				
Indigenous	0.530***	0.114***	0.555***	0.187***
Indigenous x education expectation medium	1.262	3.757	1.114	3.435**
Indigenous x education expectation high	1.282	2.984	1.008	1.838
Panel B - Family				
SES low				
Indigenous	0.567**	0.486	0.703*	0.235**
Indigenous x education expectation medium	1.421	1.149	1.06	2.347
Indigenous x education expectation high	1.448	1.593	0.818	3.070**
Father - tempory work				
Indigenous	0.556**	0.357***	0.551***	0.358***
Indigenous x education expectation medium	1.465	1.686*	1.18	1.629**
Indigenous x education expectation high	1.227	1.717*	0.805	1.620**
Father - unqualified work				
Indigenous	0.552***	0.103**	0.459***	0.351**
Indigenous x education expectation medium	1.382	5.438	1.364*	1.502
Indigenous x education expectation high	1.194	6.290*	1.196	1.442
Mother - education low				
Indigenous	0.723*	0.538*	0.677**	0.347***
Indigenous x education expectation medium	1.132	1.203	1.006	1.952**
Indigenous x education expectation high	1.151	1.238	0.87	1.757*
Panel C - School				
Urban school				
Indigenous	0.658*	0.525***	0.779	0.553***
Indigenous x education expectation medium	1.043	1.491	0.916	1.144
Indigenous x education expectation high	1.131	1.416	0.821	0.993
School performance low				
Indigenous	0.638	0.761	0.636*	0.76
Indigenous x education expectation medium	1.3	0.974	1.271	0.873
Indigenous x education expectation high	0.767	1.107	0.738	0.871
Panel D - Peer effects				
Indigenous	0.633***		0.484***	
non-Indigenous educational expectations school prevalence	2.268***		2.328***	
non-Indigenous educational expectations school prevalence x Indigenous	0.701***		0.664***	
Indigenous educational expectations school prevalence	1.508***		1.508***	
Indigenous educational expectations school prevalence x Indigenous	1.500***		1.672***	

Notes: (1) Columns YES (1 and 4) represent the described panel (e.g., repeat) and the NO columns (2 and 4) are the complementary group (e.g., non-repeaters) expect from Panel D. (2) Family SES is low if the SES index falls into the bottom tercile of sample distribution and the complement group is given by the top tercile. (3) Temporary work indicator equals to 1 if the father works seasonally or occasionally, and zero if father works in paid-permanent employment, while qualified work (=1 if father's work is admin or professional, and 0 otherwise). (4) School quality is obtained by generating the mean school achievement for math and reading and then dividing into terciles (low is the bottom tercile and high the top tercile). Significance levels: * 10%, ** 5%, *** 1%.

Table 7. Selection on observables and unobservables on the effect of education expectations on achievement

	Baseline effect		Controlled effect		$\beta = 0$		
	Coeff	R^2	Coeff	R^2	δ	Identified set	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A - Both parents are Indigenous (I1)							
Math							
education expectation medium	0.034***	0.005	0.014*	0.067	0.148	0.014	0.011
education expectation high	0.127***	0.031	0.002	0.16	0.244	0.002	-0.021
Reading							
education expectation medium	0.068***	0.012	0.03***	0.08	0.978	0.030	-0.025
education expectation high	0.212***	0.058	0.023*	0.24	0.297	0.023	-0.009
Panel B - One parent is Indigenous (I2)							
Math							
education expectation medium	0.045***	0.005	0.005	0.106	-0.060	0.005	0.005
education expectation high	0.13***	0.024	0.022	0.189	-0.202	0.022	0.029
Reading							
education expectation medium	0.105***	0.021	0.046**	0.142	1.181	0.021	0.046
education expectation high	0.256***	0.066	0.084***	0.257	0.526	0.057	0.084
Panel C - Based on language (I3)							
Math							
education expectation medium	0.027***	0.007	0.042***	0.086	0.141	0.042	0.043
education expectation high	0.04***	0.013	0.028*	0.178	-0.242	0.028	0.029
Reading							
education expectation medium	0.021**	0.004	0.044***	0.076	0.988	0.044	0.083
education expectation high	0.077***	0.028	0.037**	0.279	0.403	0.037	0.034

Notes: (1) Baseline effects and controlled effects denotes the model without controls and full controls (individual, family and schools), respectively. (2) The identified set in column (5) lower bound is $\tilde{\beta}$ and the upper bound is given by β^* based on R_{max} which is assumed to be 30% higher than the R^2 for the model with students controls: $R_{max} = \Pi \times \tilde{R}$ and $\Pi = 1.3$. See oster16. Significance levels: * 10%, ** 5%, *** 1%.

Table A1. Countries' Indigenous prevalence and education expectations learning gap (grade 6)

	Indigenous						Non-Indigenous					
			Gap						Gap			
	Prevalence	Education expectation - low	Math		Reading		Prevalence	Education expectation - low	Math		Reading	
			% high	score	% high	score			% high	score	% high	score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ARG	0.12	0.14	0.00	-34.5	-0.08	-44.67	0.88	0.07	-0.09	-28.3	-0.21	-50.0
BRA	0.12	0.19	-0.13	-65.0	-0.18	-85.89	0.88	0.10	-0.18	-62.8	-0.30	-72.8
CHL	0.08	0.02	-0.38	-84.8	-0.21	-36.76	0.92	0.03	-0.15	-37.8	-0.21	-47.9
COL	0.09	0.04	-0.07	-34.5	-0.21	-95.48	0.91	0.02	-0.17	-51.2	-0.34	-80.6
ECU	0.19	0.14	0.00	-8.8	-0.04	-27.02	0.81	0.07	-0.11	-43.4	-0.21	-61.0
GTM	0.91	0.20	-0.07	-48.4	-0.15	-65.66	0.09	0.18	-0.08	-35.0	-0.13	-39.6
HON	0.30	0.31	-0.01	-20.9	-0.12	-46.05	0.70	0.16	-0.10	-39.1	-0.26	-67.3
MEX	0.15	0.26	-0.22	-66.6	-0.15	-56.70	0.85	0.12	-0.29	-74.6	-0.36	-84.5
NIC	0.24	0.14	-0.02	-14.3	-0.12	-31.65	0.76	0.12	-0.05	-30.1	-0.13	-44.4
PAN	0.28	0.19	-0.05	-32.4	-0.08	-50.63	0.72	0.07	-0.07	-50.8	-0.27	-78.4
PAR	0.20	0.23	-0.03	-42.8	-0.04	-61.32	0.80	0.07	-0.08	-45.2	-0.19	-72.3
PER	0.43	0.13	-0.16	-77.8	-0.21	-90.52	0.57	0.05	-0.27	-98.1	-0.38	-116.8

Notes: (1) Indigenous categories are based on parental definition I1 (see Table 1 for details). (2) Education expectations low is defined as 1 if parental education of their children is at most to reach lower secondary, and 0 otherwise. (3) Gaps on achievement are defined as the difference on the proportion of those students reaching levels 3 and 4 between the low expectation group and the high expectation group (and similarly for continuous scores) for the specific Indigenous categories: I1 (columns 3 to 6) and NI (columns 9 to 12).

Table A2. Indigenous (I1) impact on on parental education expectations. Ordered logit (odds ratio)

	(1)	(2)	(3)	(4)
Indigenous	0.702***	0.725***	0.932*	0.973
Age		0.778***	0.863***	0.867***
Girl		1.180***	1.217***	1.228***
Repeat		0.632***	0.714***	0.731***
Missed classes (%)		0.705***	0.762***	0.769***
Preschool attendance		1.419***	1.196***	1.204***
Study time (at least 1 hour)		1.228***	1.151***	1.135***
Work		0.725***	0.827***	0.862***
Wealth index			2.015***	1.706***
Father education			1.183***	1.159***
Mother education			1.216***	1.185***
Number of books			1.124***	1.123***
Study supervision index			1.340***	1.332***
Public				0.650***
Urban				1.179***
Infrastructure index				1.248***
Number of books in the library				1.012
Number of web-connected PC				1.013
cut1	-2.179***	-5.248***	-2.502***	-2.725***
cut2	0.0736	-2.778***	0.0933	-0.127
variance level 2	1.574***	1.347***	0.275***	0.236***
N schools	2,325	2,280	2,263	2,263
N	40,877	31,269	26,869	26,869
Student controls	NO	YES	YES	YES
Family controls	NO	NO	YES	YES
School controls	NO	NO	NO	YES

Notes: (1) Significance levels: * 10%, ** 5%, *** 1%.

Table A3. Estimation of the impact of different definitions of Indigenous on learning through parental education expectations. Multilevel linear scores (3-levels).

	Full sample						Matched sub-sample			
	Math			Reading			Math		Reading	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A - Both parents are Indigenous (I1)										
education expectation medium	11.240***	2.754	1.373	17.161***	9.908***	9.037***	13.364***	12.789***	19.610***	25.160***
education expectation high	35.891***	19.868***	17.576***	48.667***	27.918***	25.259***	40.796***	43.882***	55.556***	60.417***
Indigenous	-12.842***	-10.301***	-12.258***	-16.828***	-13.251***	-13.024***	-7.323	-11.317**	-8.573*	-4.284
Indigenous x education expectation medium	5.074*	6.873*	8.656**	5.019*	4.009	3.883	2.365	5.529	0.327	-6.764
Indigenous x education expectation high	-2.944	-0.207	2.929	-5.026*	-2.398	-0.931	2.175	3.598	-1.558	-6.629
variance level 3	3.716	3.503	3.413	3.457	3.018	2.858	3.670	3.716	3.362	3.336
variance level 2	3.863	3.476	3.355	3.932	3.322	3.181	3.779	3.863	3.806	3.811
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,325	2,280	2,263	2,325	2,280	2,263	1964	1781	1964	1781
N	40,877	26,869	24,724	40,877	26,869	24,724	8890	7951	8890	7951
Panel B - One parent is Indigenous (I2)										
education expectation medium	11.931***	2.311	1.294	17.867***	9.954***	9.175***	7.881	6.591	22.601***	16.315***
education expectation high	37.045***	19.561***	17.752***	50.048***	28.415***	26.166***	45.047***	37.807***	60.118***	52.586***
Indigenous	-9.260***	-9.333*	-9.732*	-18.623***	-15.787***	-13.660**	-8.780	-12.229	-13.694**	-19.208**
Indigenous x education expectation medium	0.289	7.849	8.137	4.820	9.829*	6.236	8.917	11.145	6.301	9.497
Indigenous x education expectation high	-7.578**	2.511	2.644	-2.221	6.272	5.562	1.439	9.582	6.547	14.920*
variance level 3	3.729	3.516	3.439	3.452	2.983	2.810	3.645	3.671	3.346	3.323
variance level 2	3.847	3.471	3.358	3.870	3.247	3.110	3.699	3.700	3.658	3.635
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,248	2,150	2,053	2,248	2,150	2,053	1759	1588	1759	1588
N	35,649	22,247	20,391	35,649	22,247	20,391	5097	4684	5097	4684
Panel C - Based on language (I3)										
education expectation medium	11.880***	2.274	1.150	18.171***	10.122***	9.130***	17.244**	18.593**	26.332***	21.164**
education expectation high	37.511***	19.328***	17.347***	50.765***	28.268***	25.614***	38.136***	40.919***	51.711***	51.341***
Indigenous	-36.090***	-39.050***	-39.825***	-45.752***	-44.080***	-43.374***	-38.122***	-33.595***	-43.635***	-35.904***
Indigenous x education expectation medium	8.461*	22.056***	25.551***	6.456	9.410	11.334	17.053	13.718	13.769	12.489
Indigenous x education expectation high	-4.862	10.566	14.894**	-10.311**	2.411	4.437	13.943	15.684	12.961	10.160
variance level 3	3.721	3.495	3.420	3.457	2.971	2.818	3.825	3.684	3.734	3.603
variance level 2	3.846	3.471	3.367	3.881	3.274	3.143	3.783	3.698	3.798	3.858
N level 3	12	12	12	12	12	12	12	12	12	12
N level 2	2,222	2,147	2,110	2,222	2,147	2,110	712	655	712	655
N	31,751	20,783	19,096	31,751	20,783	19,096	1740	1668	1740	1668
Student controls	NO	YES	YES	NO	YES	YES				
Family controls	NO	YES	YES	NO	YES	YES				
School controls	NO	NO	YES	NO	NO	YES				
Matched sub-sample: student, family characteristics							YES	NO	YES	NO
Matched sub-sample: student, family and school characteristics							NO	YES	NO	YES

Notes: (1)Students controls are: age, gender, repetition, missed class, attended preschool, study time and work. Family controls: socio-economic status, father and mother education, number of books and supervision (index). School controls: school type, location, infrastructure, number of books and PCs with internet connectivity. (2) Estimates are obtained using a linear three-level multilevel structure (level 1: students; level 2: schools and level 3 countries). (3) Matched sub-samples are obtained by propensity score matching (1 to 1 nearest neighbour, no replacement) and the 'treatment' is given by the indicators I1, I2 and I3 and the 'untreated' population those student with neither parent is Indigenous. Propensity scores are estimated using the list of variables of Table 3. Significance levels: * 10%, ** 5%, *** 1%.